Bear Spring Furnace
Five miles east of Dover on Highway 49
Dover Vicinity
Stewart County
Tennessee

HABS No. TENN-36

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Buildings Survey
Office of Archeology and Historic Preservation
National Park Service
Department of the Interior
Washington, D.C. 20240

BEAR SPRING FURNACE

Location: Five miles east of Dover on Highway 49, Dover Vicinity, Stewart County, Tennessee
Latitude: 36°28'33" Longitude: 87°45'10"

Present Owner: Dover Iron Company

Present Occupant: Not occupied

Present Use: Not in use

Statement of Significance: This thirty-seven-foot limestone stack is a surviving example of the charcoal cold-blast furnaces which enabled Tennessee to rank fifth in the nation in iron production during the last quarter of the nineteenth century. Brown hematite ore from local deposits was used to manufacture a very high grade of iron. In blast from 1873 until 1907, the furnace was fueled with charcoal produced from 63,000 acres of local timber.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of erection: 1873.

2. Architect: Ran Umbenhour.

3. Original and subsequent owners: The first charcoal blast furnace on this site was built by Joseph and Robert Woods and Thomas Yeatman in 1830. The furnace used the high-grade hematite ore found in local deposits. This furnace was abandoned in 1854 and the machinery moved to Dover Number 2 Furnace. The old furnace was destroyed by Union forces in 1862.

In 1873, the operation at Bear Spring was reopened and the present furnace built. A decorative stone about midway up the north face of the structure states that Ran Umbenhour was the architect. Operations at this time were under the direction of Major Joseph Vaulx, who was vice-president of the Cumberland Iron Company. Captain J. P. Druillard was president of the Company which, with the LaGrange Company, owned 100,000 acres joining for twelve miles on the crest of Tennessee Ridge. This ridge was the watershed between the Tennessee and Cumberland Rivers.

From 1896 until 1901, Bear Spring was owned and operated by White, Dixon and Company. During their ownership one George Hurt is remembered in the county as being a foundryman there.

In 1901 the Dover Iron Company assumed ownership of the furnace. An Englishman, John H. Long, planned and laid out a town at Bear Spring that was to be five miles long. The town was not built, and the company was reorganized. John C. Ralk served as general manager and G. W. Boring was the head foundryman. It was during this period that a railroad was built to Tennessee Ridge. Its foundation cost $100,000. The railroad is no longer in existence and Highway 49 follows its bed.

Operations at Bear Spring ceased in 1907. The remains of the furnace and about five hundred acres of land are still owned by the defunct Dover Iron Company.

4. Original plans and construction: Bear Spring Furnace was described in 1874 by J. B. Killebrew in his "Introduction to the Resources of Tennessee" as follows:

> "Re-built in 1873, out of blast since 1854, stone stack thirty eight feet and eleven inches; two tuyers; steam power; cold blast; boilers heated on top of stack with waste gas from furnace; horizontal engine, three tubs; will blow about two pounds per inch; expected to make twelve to fifteen tons per day; with about the same yield of material as Dover Furnace; coal will cost one cent per bushel less and ore fifty cents per ton less than at Dover Furnace. Wages about the same as at Dover Furnace. The property embraces 63,000 acres of land with an inexhaustible supply of ore and timber. Cumberland River divides the property with a river frontage of eight miles. It is well supplied with running water and springs, and has better roads than is usual in this section. Near Dover is a deposit of fir-clay of good quality. It is used for lining the furnaces."

The best description of the furnace was given by J. B. Killebrew in 1881. He wrote:

> "The only furnace of the Cumberland Iron Works now in blast is Bear Spring. It is located near the Cumberland River on the South Side. The stack is thirty-seven feet high, built of limestone, thirty-eight feet square at the base, and twenty-five feet square at the top. The hearth is six feet four inches high and twenty-eight inches from the bottom of the hearth to

the center of the tuyers; it is forty-two inches in diameter at bottom and fifty-two inches at top; the boshes taper from fifty-two inches at the top of the hearth to an extreme width of ten feet six inches with a vertical height of four feet one inch. The height from the top of boshes to the top of the throat is twenty six feet seven inches; for eight feet above the boshes the wall is drawn in only three inches, making at that point a diameter of ten feet; the throat is four feet six inches in diameter, and gas is taken out to the boilers just above the charge by a flue thirty-two inches wide and thirty inches high, arched at the top. This furnace is cold blast and blown by an Arnslie and Cochran horizontal engine, steam cylinder thirty by seventy-two inches; three air cylinders with steam cylinder connecting by gearing, each thirty-six by fifty-four inches; three steam boilers thirty-six inches in diameter by thirty-eight feet long with steam pressure at seventy pounds, the blast pressure at the cylinders is estimated at three and one half pounds; air is drawn into the furnace through one three and a half inch tuyer; blast cylinder has seven strokes to six of steam. The product of this furnace is fourteen and three fourths tons per day, and has reached seventeen tons, with a consumption of one hundred and fifty bushels of coal to the ton. Leaving out office salaries the iron made at Bear Springs costs as follows:

2 tons of ore /at/ $2.00	$ 4.00
150 bushels of charcoal /at/ .07	10.50
Limestone	.50
Labor	2.46
	$17.46

The unusually large yield of this furnace is attributed by Captain Druillard to the richness of the ore, others say the ore is the same used by the furnace of years past, that the larger yield is caused by the greater volume of blast, a third cylinder having been added, and to better management under new owners."

B. Sources of Information:

1. Primary and unpublished sources:

Conversation with John J. Conroy, agent for Dover Iron Company.

McClain, Iris Hopkins. "A History of Stewart County." Unpublished thesis. Tennessee State Archives, 1965, pp. 22-26.

Office of the Register, Stewart County, Dover, Tennessee.

2. Secondary and published sources:

Killebrew, J. B. Introduction to the Resources of Tennessee. Nashville: Tavel, Eastman, and Howell, 1874, pp. 931-932.

Killebrew, J. B. Iron and Coal of Tennessee. Nashville: Tavel and Howell, 1881, pp. 103-104.

Prepared by John W. Kiser
Architectural Historian
National Park Service
Summer 1971

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: This 37-foot-tall square limestone stack is all that is left of the charcoal cold-blast furnaces which enabled Tennessee to rank fifth in the nation in iron production during the last quarter of the nineteenth century.

2. Condition of fabric: Excellent.

B. Description of Exterior:

1. Over-all dimensions: 32' x 32' at the base; 37 feet high; 25 feet square at the top. The structure has a square base and battered walls.

2. Wall construction, finish and color: Rusticated rock-faced ashlar blocks of Tennessee limestone laid without mortar.

3. Openings: The battered walls have openings on all four sides, with a steel lintel over each opening. A low-relief carving in stones over the north opening includes a primitive depiction of a bear, tbe words "Spring Furnace," and the name of the architect--Ran Umbenhour.

C. Site:

1. General setting and orientation: The structure is five feet south of Tennessee highway 49; its north wall faces the highway.

2. Outbuildings: The remains of a similar structure are located thirty feet south of the furnace.

Prepared by Roy C. Pledger
Supervisory Architect
National Park Service
August 2, 1971

PART III. PROJECT INFORMATION

These records were made during the summer of 1971 as part of a co-operative project of the National Park Service, the Tennessee Historical Commission, and the Historic Sites Federation of Tennessee. The work represented the second phase of an extensive recording program to document the historic architecture of Middle Tennessee and involved the recording of structures in the counties surrounding Nashville.

The project was under the direction of James C. Massey, at that time Chief of the Historic American Buildings Survey. Supervisor of the recording team was Prof. Roy C. Pledger of Texas A & M University. The team was composed of John W. Kiser, Architectural Historian (University of Tennessee); Daryl P. Fortier, Architect (University of Minnesota); and student architects Gilbert M. Glaubinger (Rhode Island School of Design), Steve P. Roberts (Ohio State University), and Barry S. Williams (Texas A & M University). Photographs were made by Jack E. Boucher, HABS staff photographer.